

Summary

Why this research?

This research focuses on the reliability of travelling by train. The research objective is to detail the current knowledge available about railway reliability and to arrive at a method for determining and valuing the effects future measures will have on reliability. We define 'reliability' as the probability that a journey can be made in accordance with the passengers' preconceptions. This can involve journey times, but also the comfort levels, information and services provided during the journey. In this research, however, we limit our focus to the reliability of journey times. Robustness is a term frequently used in policy plans. The robustness of the railway is a supply term: to render the network less vulnerable to disruptions. This can involve preventing disruptions, but also reducing the consequences resulting from network disruptions. For the purposes of this research, our definition is derived from the passenger's perspective: the prevention of extreme journey times resulting from disruptive incidents. Such incidents often lead to train cancellations. For train passengers, robustness is a part of reliability.

To date reliability incomplete

At present, the government and railway operators primarily operationalise the reliability of train journeys according to the trains' arrival punctuality at various rail network junctions. Nevertheless, various other elements remain unexamined. Examples are the fact that full trains and trains largely empty of passengers are equally accounted for, that train cancellations remain unaccounted for and that the effects delays have on the entire, door-to-door journey are ignored. The latter effect can lead to an accumulation of delays, when travellers miss connecting trains, as well as efforts to overcome, or catch up with, delays. Moreover, reliability is not only about the extent of the average delay, but also especially the variations in journey times, which relate to the probability of arriving late at a particular destination. Train passengers can minimize this risk by catching earlier trains. The costs associated with arriving too late at a destination depend on personal circumstances and the purpose of the journey. The same risk applies to arriving too early at a destination, but these costs are lower per time unit. In actuality, train passengers seek to a balance between both risks.

Costs of measures vary widely

Incidents and irregularities are one part of the reason for train delays. The other part stems from the knock-on effect that an initial delay has on the rest of the rail network. In recent years, suicides and peoples' unsafe behaviour on trains and train tracks are more often the cause for delays than the traditional reasons, such as infrastructure or train equipment malfunctions. The costs of measures aimed at improving reliability vary widely. Measures such as constructing new railway lines or extending existing lines are expensive; measures focused on organizational areas, such as improved planning and implementation of timetables, are relatively inexpensive. This also applies to measures such as improved information concerning delays or making the waiting times at stations more pleasant.

Improved system for valuation of future measures

In order to improve the valuation of future reliability measures in a Social Cost Benefit Analysis (SCBA), there are - in addition to a more complete understanding of reliability - two other important elements: determination of the effects that measures have on reliability levels, and valuation of these effects in monetary (euro) terms. Knowledge about the first element is rarely published. Knowledge about the second element is still being developed.

KIM Netherlands Institute for Transport Policy Analysis has compiled a roadmap that includes the building blocks required for improved estimation and valuation of railway reliability effects. In this roadmap, the developing understanding of reliability and the valuation of effects of measures are more complete than are the effects of measures on reliability levels. Additional research, partly supported by data presently available within the railway sector, is required to complete the latter.